



DEVELOPING A KNOWLEDGE BASE ON GENOMICS AND POPULATION HEALTH

WHAT IS THE PUBLIC HEALTH ISSUE?

To translate genetic research into opportunities for preventive medicine and public health, population-based epidemiologic studies are needed to measure the interactions of genetic variants with modifiable risk factors and their joint contributions to disease risk. In addition, a coordinated, international, interdisciplinary effort is required to synthesize, evaluate, and interpret this information.

WHAT HAS CDC ACCOMPLISHED?

CDC has established the Human Genome Epidemiology Network (HuGENet™), a collaboration of more than 400 individuals from diverse backgrounds and organizations committed to developing and disseminating population-based human genome epidemiologic information. HuGENet™ products include

- A continuously updated, searchable online information system indexing population-based scientific literature in human genome epidemiology.
- HuGE reviews in peer-reviewed journals.
- HuGE fact sheets, e-journal clubs, and case studies that can be used for training.
- HuGE workshops for training and methods development.

Examples of Program in Action

- In 2005 alone, HuGENet™ collaborators published 10 HuGE reviews and 13 online e-journal clubs. At the end of the year, the online information system contained 19,317 citations indexed by gene, health outcome, and personal or environmental factors.
- A CDC-wide working group of epidemiologists and laboratorians developed a proposal to determine the prevalence of selected genotypes of public health importance using the nationally representative, population-based NHANES III DNA Bank. In collaboration with the National Cancer Institute, accurate, low-cost genotyping for more than 100 genetic variants in approximately 7300 specimens has been completed, and analysis will be conducted in 2006.
- HuGENet™ partnered with the Cambridge Genetics Knowledge Park (CGKP) to convene a workshop in Cambridge, UK, October 6–8, 2005. The workshop engaged epidemiologists, geneticists, statisticians, and clinicians in discussion of networks for collaboration on systematic reviews of gene-disease association studies.
- HuGENet™ joined with international partners in an expert workshop held at the Rockefeller Foundation Study and Conference Centre, Bellagio, Italy, April 14–20, 2005, which created the Genome-based Research and Population Health International Network (GRAPH-Int).

WHAT ARE THE NEXT STEPS?

CDC will continue its collaboration with intra-agency, national, and international partners to provide leadership, guidance, and support for the collection and synthesis of population-based data to characterize the contribution of genetic variants and gene-environment interactions in health and disease.